Vivekanand College, Kolhapur (Autonomous)

Department of Biotechnology (Optional)

Academic Year: 2022 - 23

Annual Teaching Plan

Name of the teacher: **Miss Salama Harun Nadaf**

Programme: **B.Sc. I. B.Sc. II** Semester: **I , III**

Subject: **Biotechnology** Course Title: **DSE-1009A Basics of Biotechnology I**

: DSE-1009A Basics of Biotechnology II

: DSE1009 C- Enzyme Technology and Molecular Biology

Month AUGUST 2022			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
14	2	16	Paper I- Basics of Biotechnology I Scope of Biotechnology Carbohydrates	Scope and Importance of Biotechnology Branches of Biotechnology Introduction carbohydrates
06	4	10	Paper III- Enzyme technology Credit I- Introduction	Introduction and concept of enzymes
Month SEPTEMBER 2022			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
12	3	15	Paper II- Basics of Biotechnology II Credit -II Biophysical technique	Spectroscopy, Lambert Beers law Colorimetry
06	06	10	Paper III- Enzyme technology Credit I- Active site Enzyme inhibition Enzyme kinetics	Enzyme activity, Active site Factors affecting enzyme activity Inhibition
Month OCTOBER 2022			Module/Unit:	Sub-units planned
10	2	12	Paper I- Basics of Biotechnology I Lipids, Enzymes	Classification function properties
10	3	13	Paper III- Enzyme technology Credit II- Immobilization	Immobilization type and application
Month Jan 14			Module/Unit:	Sub-units planned
5	2	07	Paper II- Basics of Biotechnology II Credit -II Centrifugation biochemical technique	Centrifugation Biochemical technique
5	2	07	Paper III- Enzyme technology Credit II Allosteric enzyme, Ribozyme	Structure and function of allosteric enzyme Ribozyme structure function

(Ms. S. H. Nadaf)
Name and Signature of Teacher

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DEPARTMENT OF BIOTECHNOLOGY (OPTIONAL)
VIVEKANAND COLLEGE, KOLHAPUR
(AUTONOMOUS)

Vivekanand College, Kolhapur (Autonomous)

Department of Biotechnology (Optional)

Academic Year: 2022 - 23

Annual Teaching Plan

Name of the teacher: **Miss. Salama Harun Nadaf**

Programme: **B.Sc. II, B.Sc. I** Semester: **II, IV**

Subject: **Biotechnology**

Course Title: **DSE-1009B Cell biology**

DSC-1009F1- Advances in Biotechnology

DSC- 1009F2 Cell metabolism and Virology and ATC

Month February 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
10	2	12	B.Sc,I Cell Biology Unit I- Concepts in cell biology	Cell, type , cell cycle, Cell division
10	2	12	B.Sc, III Credit I- Cell Metabolism Credit I- Biochemical techniques	Introduction to carbohydrate metabolism and concept in metabolism Electrophoresis type and all
Month March- April 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
5	2	12	B.Sc,I Cell Biology Unit I- Cell organelles in cell	Cell organelles structure and function
15	2	17	B.Sc, III Credit I- Lipid Metabolism Credit I- Biochemical techniques	1. Fatty acid synthesis 2. Beta oxidation 3. Tracer Techniques
Month May- 2023			Module/Unit:	Sub-units planned
10	0	10	B.Sc,I Cell Biology Unit II- Genetics	Lows of Mendelian inheritance Crosslinking
17	2	19	B.Sc, III Credit I- Nucleic acid Metabolism Credit I- Biochemical techniques	Purine and pyrimidine metabolism Chromatography- Ion exchange.Gel filtration
Month -JUN 2022			Module/Unit:	Sub-units planned
10	2	12	B.Sc,I Cell Biology Unit II- Genetics	Epistasis, Multiple alleles, Extrachromosomal material
10	3	13	B.Sc, III Credit I- Protein Metabolism Credit I- Biochemical techniques	Urea Cycle Affinity Chromatography Spectroscopy- 1, atomic, Spectroflurometry, Infra red

Name and Signature of Teacher

CMS Nadaf SHD

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Department of Biotechnology (Optional)
Academic Year: 2022 - 23

Annual Teaching Plan

Name of the teacher: **Mrs. Mrunal Sachin Patil**

Programme: **B.Sc. III, B.Sc. II, B.Sc. I** Semester: **V, III, I**

Subject: **Biotechnology** Course Title: **DSE-1009-E1 Plant & Environmental Biotechnology**

DSE-1009-C Molecular Biology

DSE-1009A Basics of Biotechnology II

Month August **September2022**			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Plant Biotechnology Credit I	Historical and conceptual background, Lab org, Sterilization
10	02	12		
10	02	12	Molecular Biology Credit II	Historical and conceptual background, Structure of DNA, RNA, protein
05	00	05	Basics of Biotechnology Unit I	Protein History and intro, Amino acids intro
Month October **2022**			Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Plant Biotechnology Credit I- Introduction	Culture media (Types, properties, components)
10	3	13		
10	00	10	Molecular Biology Credit II	Prokaryotic Replication and Eukaryotic Replication
05	00	05	Basics of Biotechnology Unit II –	Types of amino acids
Month November **2022**			Module/Unit:	Sub-units planned
10	02	12	Plant Biotechnology Credit II- Introduction	Callus Culture, Suspension Culture, Organ Culture
10	03	13	Molecular Biology Credit II	Pro and Eukaryotic Transcription, Prokaryotic Translation
05	00	05	Basics of Biotechnology Unit I	Structure of amino acids, Structural levels of protein
Month Des-Jan 2022			Module/Unit:	Sub-units planned
10	00	10	Plant Biotechnology Credit II- Introduction	Clonal Propagation, Anther and pollen culture,
10	03	13	Molecular Biology Credit II- Basics of Mol Bio	concepts, applications Eukaryotic Translation, Gene regulation, DNA damage and repair
05	00	05	Basics of Biotechnology Unit I-Protein and amino acid	Structural Levels, Functions of protein

Name and Signature of Teacher
(Ms. M. S. Patil)

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Academic Year: 2022 - 23

Annual Teaching Plan

Name of the teacher: **Mrs. Mrunal Sachin Patil**

Programme: **B.Sc. II, B.Sc. I** Semester: **II, VI**

Subject: **Biotechnology** Course Title: **DSE-1009F1 Animal Tissue Culture**

DSC-1009D Immunology and r DNA technology

Month **MAR 2023**			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
10	2	12	**Animal Tissue Culture** Credit I	History and intro Landmarks in ATC Scope and recent advances
10	2	12	**r -DNA technology** Section II Credit I	Introduction to r DNA technology, Nucleases Restriction enzymes
Month **APR 2023**			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
10	2	12	**Animal Tissue Culture** Credit I	Requirements of Animal Cell Culture Sterilization of Glassware Culture media
10	2	12	**r- DNA technology** Section II Credit I	Enzymes to modify ends of DNA Cloning vectors Construction of C DNA and genomic library
Month **MAY 2023**			Module/Unit:	Sub-units planned
10	0	10	**Animal Tissue Culture** Credit II	Conceptual background Basic techniques of mammalian cell culture
10	2	12	**Section II-r DNA technology** Credit II	Probes Blotting techniques PCR
Month JUN 2023			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
10	02	12	**Animal Tissue Culture** Credit II	Organ and Histotypic culture Types and maintenance
10	02	12	**Section II -r DNA technology** Credit II	DNA sequencing techniques Selection of transformed cells Applications of gene cloning Safety measures and biological risk for r-DNA work

Name and Signature of Teacher

(Ms. M.D. Ulape)
Mrs. M.S. Patil

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Academic Year: 2022 - 23

Annual Teaching Plan

Name of the teacher: **Miss Anjor Ajit Jadhav**

Programme: **B.Sc. I. B.Sc. III** Semester: **I ,V**

Subject: **Biotechnology** Course Title: **DSE-1009-E1 Plant & Environmental Biotechnology**

DSE-1009-E2 Large-Scale Manufacturing Process

DSE-1009A Basics of Biotechnology II

Month AUGUST **2022**			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Concept of bioprocess engineering and fermentation technology Credit I- Introduction	The basic design of a fermentor Types of fermentors Fermentation medium and optimization
10	2	12		
10	2	12	Basics of Biotechnology Unit II – Concept of sterilization	Introduction Physical agents: Temperature, radiation, filters
Month SEPTEMBER 2022			Module/Unit:	Sub-units planned
Lectures	Practical	Total	Basics of Biotechnology Unit II – Concept of sterilization	Chemical Agents: phenols and phenolic compounds, heavy metals Gaseous agents: Ethylene oxide, formaldehyde
10	3	13		
10	2	12	Concept of bioprocess engineering and fermentation technology Credit I	Sterilization Strain Improvement Inoculum development
Month OCTOBER 2022			Module/Unit:	Sub-units planned
10	2	12	Concept of bioprocess engineering and fermentation technology Credit I	Pure culture techniques Culture collection canters
10	3	13	Basics of Biotechnology Unit II – Microscopy	General principles of microscopy SEM, TEM
Month Jan 2023			Module/Unit:	Sub-units planned
5	2	07	PBT and EBT Credit I - Bioremediation	Introduction Composting & vermicomposting Biopesticides Bioleaching
5	2	07	PBT and EBT Credit I - Bioremediation	Biosorption Phytoremediation Biofertilizer production

Name and Signature of Teacher
(Ms. A. A. Jadhav)

Name and Signature of HOD

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Annual Teaching Plan

Name of the teacher: **Miss. Anjor Ajit Jadhav**

Programme: **B.Sc. II, B.Sc. I** Semester: **II, IV**

Subject: **Biotechnology** Course Title: **DSE-1009B Microbiology**

DSC-1009D Immunology and r DNA technology

Month February **2023**			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
10	2	12	Microbiology Unit I- History of Microbiology	Contributions Types of Microorganisms
10	2	12	Immunology and r DNA tech Credit I- Types of immunity	Innate and acquired
Month March- April **2023**			Module/Unit:	Sub-units planned
Lectures	Practical	Total		
10	2	12	Microbiology Unit I- Morphology & cytology of bacteria	Size, shape, arrangement Structure and function of cell organelles like cell wall, cell membrane, capsule, Pilli, flagella, nuclear material, etc.
10	2	12	Immunology and r DNA tech Credit I- Types of Defence Mechanisms Organs of the immune system	The first line of defense, second line, third line Structure and function of primary and secondary lymphoid organs
Month May- June **2023**			Module/Unit:	Sub-units planned
10	0	10	Microbiology Unit II- Culture media and pure culture techniques	Common components Peptone, yeast extract, NaCl, agar agar, etc.
10	2	12	Immunology and r DNA tech Credit II- Antigen and antibodies types Immune response	Definition, types Immunoglobulin types Primary and secondary immune response
Month -JUN 2022			Module/Unit:	Sub-units planned
10	2	12	Microbiology Unit II-Culture media types	Living, non-living, methods of isolation of pure cultures, stain and staining procedures
10	3	13	Immunology and r DNA tech Credit II- Ag-Ab reactions Hypersensitivity	Principles, mechanisms, and applications Definition and types

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